

*LEISTUS FERRUGINEUS* (L.) (COLEOPTERA: CARABIDAE),  
NEW TO NORTH AMERICA

DAVID J. LARSON

Department of Biology, Memorial University of Newfoundland,  
St. John's, Newfoundland, Canada A1B 3X9

ABSTRACT

The Palaearctic species *Leistus ferrugineus* (L.) is recorded from North America for the first time, from St. John's, Newfoundland. Distinguishing characteristics of the species are described and illustrated.

The Holarctic genus *Leistus* is richly represented in the Palaearctic region but only 3 species have been reported previously from North America (Erwin 1970). These 3 species are endemic to the Cordilleran region of western North America and are similar enough amongst themselves, and sufficiently remote from any Old World form, that Erwin proposed a separate subgenus for them.

Recently specimens of *Leistus* have been collected in Newfoundland. These specimens were identified by Dr. R. B. Madge, Commonwealth Institute of Entomology, London, as belonging to the species *ferrugineus*, a Palaearctic species which is also the type species of the genus. Thus, the genus *Leistus* is now represented in North America by 4 species, *L. (s. str.) ferrugineus* (L.) and 3 western species of the subgenus *Neoleistus* Erwin.

North American specimens of *L. ferrugineus* have been collected from a very restricted area in the northwest environs of St. John's, Newfoundland. Collection records are: NEWFOUNDLAND: St. John's, Kent's Pond, 23.VIII.77. D. Larson (9), 17.X.77, Driscoll & Greer (2); St. John's, Pippy Park, 1 & 23.IX.77, 16.X.77, D. Larson (11); St. John's, Long Pond, 8.X.77, W. Parsons (1), 13.X.77, Driscoll & Greer (1); Windsor L. nr. St. John's, 30.VIII.77, D. Larson (2). Specimens have been deposited in British Museum (Natural History); Canadian National Collection; Department of Biology, Memorial University; and Strickland Museum, University of Alberta.

Specimens were collected from under stones and in litter or humus lying over well drained but moist gravelly soil in mixed *Abies-Alnus-Prunus* forest.

Members of the genus *Leistus* are remarkable for the peculiarly modified mouthparts. Figure 1 is a stereopair micrograph illustrating the mouthpart structure. Erwin (1970) postulated that the mouthparts are specialized for predation on Collembola. The gut contents of 4 specimens were examined to determine the food habits. Only one specimen possessed material in the digestive tract and this was highly macerated material in the hind gut. It was not possible to identify these remains other than to say they were mainly arthropod cuticle and that the abundance of tracheae indicated that insects other than Collembola had been eaten.

Specimens of *L. ferrugineus* are separated from the endemic North American members of *Leistus* by the following characters: *Pronotum* (Fig. 2)

with lateral margins strongly rounded and constricted before the right hind angles, lateral reflexion narrow and about equal in width to diameter of lateral setiferous puncture; *elytron* with striae very coarsely punctate basally, punctures finer and more or less obsolete towards apex; *male aedeagus* (Fig. 3) shorter than that of native North American species, ventral surface of shaft without an elongate keel, apex produced relatively shortly beyond apical orifice and tip not reflexed out of longitudinal plane when examined in lateral view.

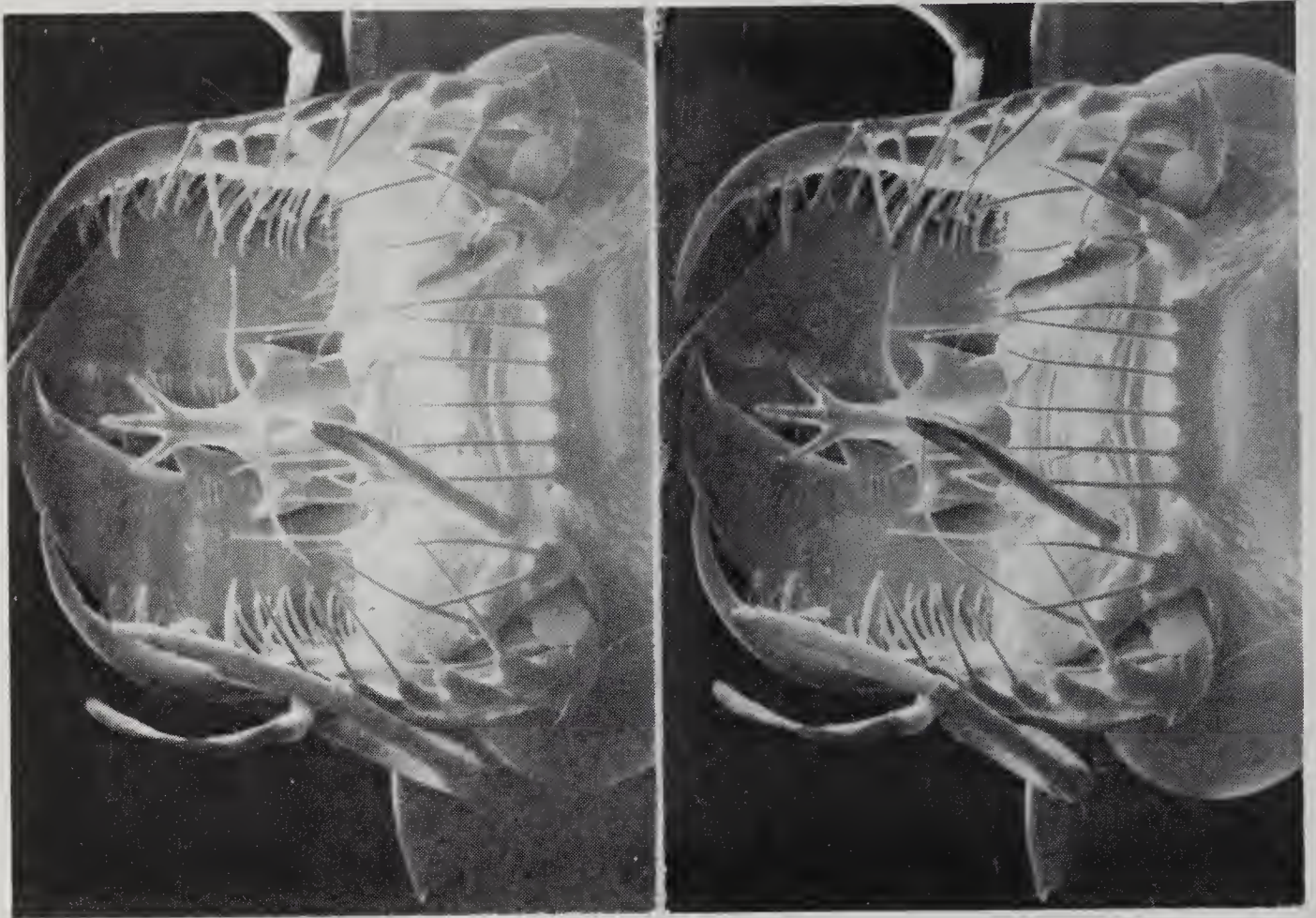
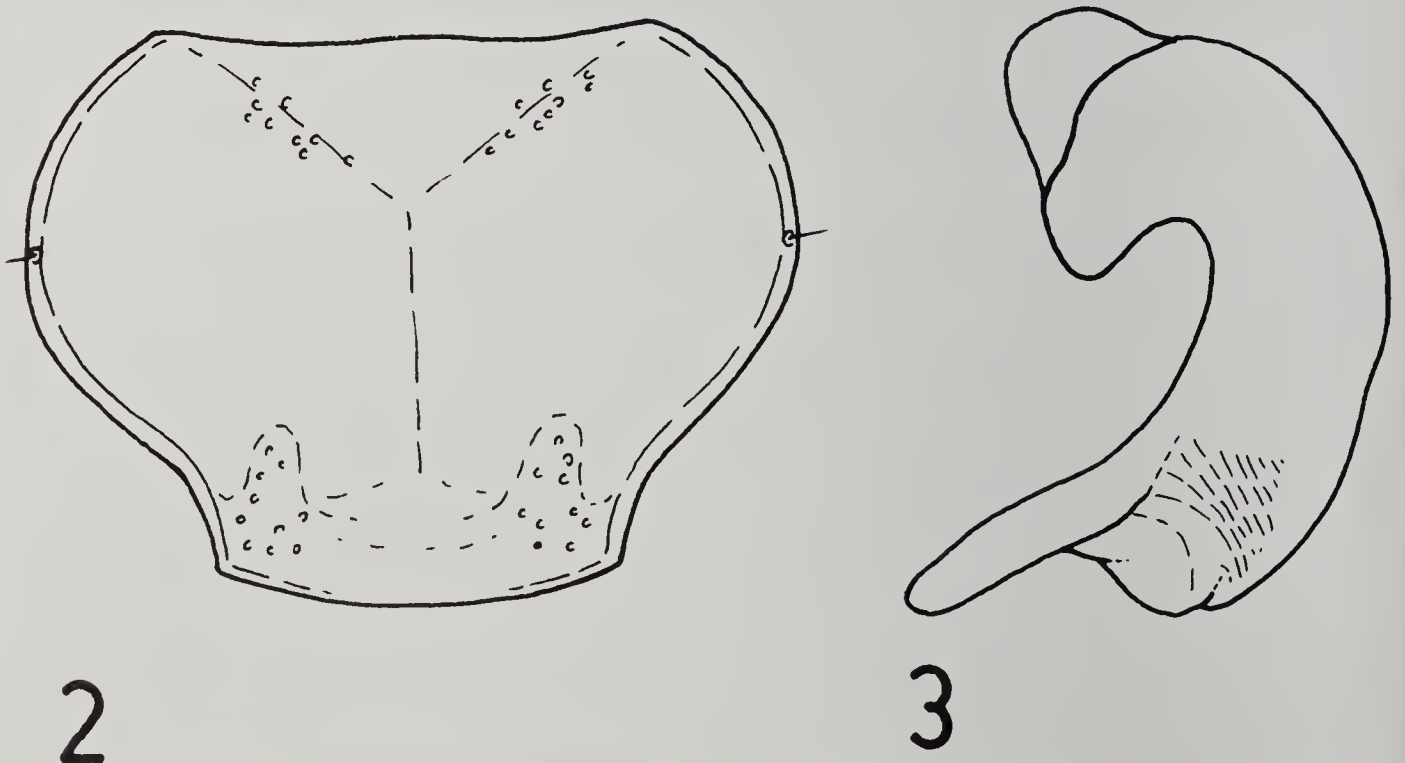


Figure 1. Stereopair micrograph of head of *Leistus ferrugineus* (L.), ventral aspect.



Figures 2-3. *Leistus ferrugineus* (L.), male. 2) Pronotum. 3) Aedeagus, lateral aspect.

All Newfoundland specimens possess wings with reflexed apices. However, the wings are somewhat narrow, being about the width of an elytron, and the veins are weakly sclerotized. Four dissected specimens lacked flight musculature. Thus, the wings seem to be nonfunctional.

*L. ferrugineus* has not been taken previously in North America, and as the present records lie far outside the known Old World distribution, its Newfoundland occurrence is certainly due to introduction. Lindroth, in his very extensive collecting in Newfoundland (Lindroth 1955, 1963), did not collect specimens of *Leistus*. He may have missed the species because it was uncommon, its distribution was very local, or the beetle had not been introduced then. Any one of these factors may apply yet the first two could be related to a late date of introduction. It is impossible to identify the date of establishment of the population, but it is probable that it occurred after Lindroth's explorations, that is after 1951 (Lindroth 1969).

The majority of introduced ground beetles in Newfoundland are either heliophilous or favour cultivated soil. However, specimens of *L. ferrugineus* occur in natural forest habitats. Using Lindroth's (1963) ecological classification of carabids, *L. ferrugineus* in Newfoundland is a heliophobous mesophil, occurring in detritus in mixed forest habitats. Thus it has a somewhat atypical ecological profile for an introduced species. Nevertheless, Lindroth (1974) has observed that among at least the British *Leistus*, *L. ferrugineus* is the species that occurs "in more open country and in drier places than other members of the genus". Thus, it is this member of the genus in the most probable source country, Britain, that best possesses the ecological characteristics of a species likely to be accidentally transported by man.

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